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10/028,629	12/20/2001	Clinton D. Chapman	19.0303	6725

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EXAMINER

LE, TOAN M

ART UNIT	PAPER NUMBER
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2863

DATE MAILED: 10/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/028,629

Applicant(s)

CHAPMAN ET AL.

Examiner

Toan M Le

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-27 are rejected under 35 U.S.C. 102(e) as being anticipated by Alft et al..

Referring to claims 1-4, 12, and 16, Alft et al. disclose a method and a computer program product in a computer readable medium for graphically planning the direction and inclination of a well bore trajectory using graphical techniques (col. 2, lines 15-17) comprising the steps of: generating an initial starting point and ending point for a well bore trajectory, the well trajectory having hold and curve sections (figure 29); creating a control point for each desired curve section between the starting point and ending point, the control points being at locations off the curve section (figure 29); identifying tangent point along the well bore trajectory where the hold sections contact a curve section of the trajectory (figure 29); determining any directional constraint on the ability to manipulate the control point (col. 15, lines 45-48; figure 29); and graphically manipulating multiple sections of the well bore trajectory simultaneously by directional movement of points related to the well bore trajectory within the determined directional constraints, wherein the graphical manipulation comprises directional movement of control points and identified tangent points (col. 15, lines 17-54; figure 29).

As to claims 5 and 14, Alft et al. disclose a method and a computer program product in a computer readable medium for graphically planning the direction and inclination of a well bore trajectory using graphical techniques (col. 2, lines 15-17) wherein the control point creating step comprises projecting each hold section contacting a curve section beyond the tangent points in the direction of hold section such that the projections of the hold sections intersect and form a control point for that contacted curve section at the intersection point of the hold section projections (figure 29).

Referring to claims 6 and 13, Alft et al. disclose a method and a computer program product in a computer readable medium for graphically planning the direction and inclination of a well bore trajectory using graphical techniques (col. 2, lines 15-17) wherein the directional movement constraint determination step is determined by

$C = v \xi + S$, where $\xi > 0$ where C is a control point. S is a starting point, v is a vector extending from S , and ξ is a scalar distance, further where C only has one degree of freedom (col. 15-16, Example #1; figure 29).

As to claim 7, Alft et al. disclose a method and a computer program product in a computer readable medium for graphically planning the direction and inclination of a well bore trajectory using graphical techniques (col. 2, lines 15-17) wherein the direction constraint determination step determines that there are no directional movement constraints on the control point, thereby enabling movement of the control point in any direction (col. 5, lines 24-30).

Referring to claims 8 and 15, Alft et al. disclose a method and a computer program product in a computer readable medium for graphically planning the direction and inclination of a well bore trajectory using graphical techniques (col. 2, lines 15-17) wherein the graphical

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manipulation of the well bore trajectory further comprises manipulating multiple sections of the trajectory by moving a control point while maintaining a constant radius of the curve section corresponding to that control point (figure 29).

As to claims 9 and 17, Alft et al. disclose a method and a computer program product in a computer readable medium for graphically planning the direction and inclination of a well bore trajectory using graphical techniques (col. 2, lines 15-17) wherein the manipulation of the curve section comprises moving the points and tangent points along the projected hold section lines (figure 29).

Referring to claims 10-11, Alft et al. disclose a method and a computer program product in a computer readable medium for graphically planning the direction and inclination of a well bore trajectory using graphical techniques (col. 2, lines 15-17) wherein the well plan further comprises multiple curve sections, connected by hold sections, the well plan also having a control point at each curve section, and wherein tangent point manipulation is constrained to movement of the tangent points, which cannot extend passed an adjacent control point or tangent point, along directional lines that connect adjacent control points (col. 5, lines 31-39).

As to claims 18-22, Alft et al. disclose a graphical well bore trajectory display capable of real-time graphical manipulation comprising: an initial hold section at the starting point of the well bore trajectory (figure 29); a curve section connected to the initial hold section (figure 29); a second hold section connected to the curve section (figure 29); and a control point positioned at a location of the well bore trajectory (figure 29), to enable simultaneous manipulation of the hold and curve sections of the well bore (figure 29) further comprising a starting point at the initial hold section with an end point at the end of the second hold section (figure 29) and tangent

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points at points where the hold sections intersect the curve sections whose radius remains constant during graphical manipulation of the well bore trajectory and whose distance from each tangent point to the control point is equal and whose control point is formed at the intersection of projections of the hold sections that connect to the curve section (figure 29).

Referring to claims 23-25, Alft et al. disclose a graphical well bore trajectory display capable of real-time graphical manipulation further comprising multiple curve sections in the trajectory, each curve section having corresponding tangent points and a corresponding control point wherein a pair of the curve section is directly connected at a tangent point common to both curve sections and further comprising hold sections between the multiple curve sections, a hold section connecting two curve sections (col. 5, lines 31-39).

As to claims 26-27, Alft et al. disclose a method and a computer program product in a computer readable medium for graphically planning the direction and inclination of a well bore trajectory using graphical techniques (col. 2, lines 15-17), further comprising: associating at least one control point with multiple tangent points for corresponding curve sections, wherein manipulation of one of the control or tangent points causes manipulation of the associated control and tangent points (col. 5, lines 31-39).

Remarks:

Response to Arguments

Applicant's arguments filed 6/11/03 have been fully considered but they are not persuasive.

Referring to claims 1, 12, and 18, Applicant argues that "Alft's control points are not associated with a curve section. Specifically, the control points of Alft are used to incrementally

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lead a number of straight line segments across what can be visualized as a virtual arc. However, the virtual arc of Alft is not actually used in mapping the borehole trajectory. Instead, the Alft reference is based on mapping using a number of straight line segments mapped from a first target to a second target. There is no disclosure in Alft describing curve calculations such as radius or diameter dimensions. Instead, Alft discusses calculating angle between a present position and a subsequent target”.

Alft discloses control points, tangent points, hold sections, and curve sections for graphical well bore trajectory (col. 15, lines 17-54; figure 29) and calculations for radius and diameter dimensions in Examples 1-4 on columns 15-17.

Applicant further argues that “Here again, although Alft’s figure 29 illustrates an arc, this arc is used only to visually represent the path of the multiple straight-line segments. There is no discussion anywhere in Alft of tangent points used in borehole planning, much less Applicants’ claimed use of tangent points that occur where its claimed hold and curved sections meet”.

Alft states on column 5, lines 34-39, “Each control point, in this case, defines a point which is co-planar with respect to the particular and adjacent target points, is a co-planar with respect to a direction angle of the adjacent target point, and, when connected with the particular target point, tangentially intersects the region by a predetermined allowable bore length.”

Applicant also argues that “Specifically, the Alft reference requires an operator to enter data associated with various target points along an anticipated trajectory. The software then takes this data and plots a borehole path comprising multiple straight-line segments from target to target. If a target location is changed, the software then must calculate a new borehole path and recreate a display of the new path. Thus, although Alft allows manipulation of a target

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location, Alft does not allow manipulation of the well bore trajectory itself, much less through the movement of control and tangent points.”

Alft states on column 14, lines 22-39, “FIG. 7 depicts various steps involving the definition of bore path targets. After all of the existing objects have been entered or defined, the operator is ready to plan a bore path. The operator does this by entering any number of targets through which the bore path will pass. Bore path targets are defined in terms of a three-dimensional location (Distance, Left/right, and Depth). After initiating the bore path targets definition procedure 240, the user enters 242 the 3D location of a target by specifying the target’s Distance, Left/Right, and Depth values. The operator may optionally enter 244 the Pitch and/or Azimuth at which the bore path should pass through the target. The operator may assign 246 bend radius characteristics to a bore segment, which differ from the pre-established default characteristics, by entering the new values in the maximum bend radius and minimum bend radius sections for the destination target. The above-described procedure is repeated 248 for each target to be defined.”

Applicant additionally argues that “As discussed above, Alft’s control points are merely temporary destination point used in generating a next straight segment. Alft does not disclose associating a control point with a curve and a hold section. Further, Alft nowhere discusses allowing simultaneous manipulation of multiple sections through movement of its control points.”

Alft states on column 15, lines 45-51, “The purpose of control points is to lead the bore path to the destination target along a specific route, thereby matching the destination target’s

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required direction. As the control point draws the bore string into alignment with the destination direction, the control point moves closer to the destination target.”

Conclusion

THIS ACTION IS MADE FINAL.

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan M Le whose telephone number is (703) 305-4016. The examiner can normally be reached on Monday through Friday from 9:00 A.M. to 5:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (703) 308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.

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Toan Le

September 22, 2003

A handwritten signature in black ink, appearing to read 'J. Barlow', written in a cursive style.

John Barlow
Supervisory Patent Examiner
Technology Center 2800